

Public perceptions on the use of gene tech for environmental problems

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Addressing public concerns about the suitability and safety of new innovations is crucial to the responsible use of genetic technologies for environmental problems, according to a new [report](#) on New Zealanders'

perceptions commissioned by BioHeritage National Science Challenge.

The nationwide study found a wide range of views on how genetic technologies could be appropriately applied for conservation and environmental purposes, and what precautions should be considered.

With the government recently confirming plans to end New Zealand's three-decade ban on genetically engineered or modified organisms outside the lab before 2026, decision-makers, scientists, regulators and politicians should take notice of public attitudes, say the authors of "National Conversations on Genetic Technologies for Environmental Purposes: Using Deliberative Processes To Gather Perspectives From Across Aotearoa."

Nearly 400 people nationwide participated in surveys, workshops and discussions, conducted by social scientists from Auckland and Otago universities, and by the Māori biodiversity network Te Tira Whakamātaki (TTW). The research listened to and analyzed the views of New Zealanders from Northland to Rakiura, including Māori communities, GE Free and organic groups, and university students, says University of Otago's Dr. Vicki Macknight.

"Even if initially participants didn't think they knew enough about these [emerging technologies](#), the workshops were designed to expand their confidence, so everyone felt free to express their views, enabling more informed discussion on the potential and the risks of gene tech."

Small groups had to reach a consensus on suitable and appropriate tools for pest and [weed control](#), and the necessary cautions for their implementation for four different environmental problems. The participants considered RNA interference (RNAi)—also known as gene silencing—to address myrtle rust which affects [native trees](#), the honeybee parasite varroa mite, gene editing on self-seeding invasive

wilding pines, and gene drive for rat control.

Almost half of the public groups supported RNAi as a replacement for fungicides to manage myrtle rust, with participants recommending caution with regulatory control, implementation and monitoring of any off-target impacts. While RNAi was considered preferable to [genetic modification](#), there was more reserved support for RNAi against [varroa mites](#), with groups offering only tentative and conditional support, weighing up commercial, human health and ecological risks.

Gene editing of wilding pines received support, but there were concerns about the ecological impacts of genetically engineered pines. The most significant skepticism was directed toward gene drive technology for rats, with participants highlighting uncertainties surrounding its environmental, technological, and ethical implications.

The findings show that public concerns often focused on social, economic, and environmental factors rather than the technologies themselves, says the University of Otago's Dr. Fabien Medvecky, now at Australian National University.

"People's support for these technologies is influenced more by their broader impacts and regulatory oversight. High levels of regulation and oversight were strongly favored to ensure safe and responsible use.

"Decision-makers contemplating the potential of genetic technologies in the natural environment should heed our analysis of the discussions to better understand what safe and responsible innovation may mean to New Zealanders."

Māori perspectives gathered through a national survey and group discussions, revealed discomfort about the unknowns associated with genetic technologies, says TTW's portion of the report.

"There was only cautious openness to some applications. Significant concerns remain about the unknown consequences of synthetic biology, the ecological impacts, and ethical implications, including on whakapapa (genealogy), and for regulation through tikanga (cultural protocols). Continued engagement with Māori communities is essential, and general education on these tools is necessary for all living in Aotearoa."

Two special interest groups also contributed valuable insights, with members of the GE Free and organics communities expressing concerns about the control and management of gene technologies, though some acknowledged potential benefits, such as reduced toxin use. More enthusiasm for genetic technology was shown by university students, but those involved in the study called for careful regulation and monitoring.

The research underscores the value of engaging in national conversations to better understand what safe and responsible innovation means to New Zealanders, says the University of Auckland's Dr. Marie McEntee.

"These discussions help decision-makers grasp diverse perspectives and navigate the complexities of genetic technologies. Ultimately, we need to foster [open dialogue](#) to shape the future of our environment in a way that reflects our shared values and concerns."

More information: National Conversations on Genetic Technologies for Environmental Purposes: [data.bioheritage.nz/dataset/mo ... cd-bbde-0c1bcc020ddb](https://data.bioheritage.nz/dataset/mo...cd-bbde-0c1bcc020ddb)

Provided by New Zealand's Biological Heritage National Science Challenge

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